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Reply-To: Info-Hams@ucsd.edu
Subject: Info-Hams Digest V91 #212
To: Info-Hams@ucsd.edu

Info-Hams Digest Sun, 17 Mar 91 Volume 91 : Issue 212

Today's Topics:

MAJOR SOLAR FLARE ALERT - 16 MARCH - EVENT #2
SOLAR TERRESTRIAL BULLETIN - WARNING UPDATES - 16 MARCH
SOLAR TERRESTRIAL BULLETIN - WARNING UPDATES - 17 MARCH

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We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Sun, 17 Mar 1991 03:28:29 -0500
From: oler@HG.Uleth.CA (CARY OLER)
Subject: MAJOR SOLAR FLARE ALERT - 16 MARCH - EVENT #2
To: info-hams@ucsd.edu

-- MAJOR SOLAR FLARE ALERT --

MARCH 16, 1991

Alert #2

Flare Event Summary
Potential Impact Assessment

MAJOR ENERGETIC EVENT SUMMARY

Region 6545 continues to produce major flares. Another major flare occurred at 21:58 UT on 16 March. This flare began at 21:52 UT, peaked at 21:58 UT and ended at 22:15 UT on 16 March. The intensity achieved was a class M6.0/2B rating with an associated 400 s.f.u. tenflare. Radio emissions were again fairly rich, although not as intense as in previous X-class flares from this region. The intensity at 245 MHz reached 10,000 s.f.u.. The location of this flare was S09W04.

Region 6545 continues to exhibit a moderate amount of magnetic complexity. It maintains a beta-gamma-delta configuration and contains a fair amount of shear. This region has spawned numerous minor M-class flares over the past 24 hours, including an M4.8/1B at 10:54 UT on 16 March.

A proton enhancement continues at the present time, together with a small Forbush decrease which was first observed on 12/13 March coinciding with an interplanetary shock (of uncertain origin) and a following brief period of major magnetic storming.

POTENTIAL TERRESTRIAL IMPACT ASSESSMENT

No terrestrial impact is expected from the most recent M6.0/2B tenflare. This flare was not associated with any sweeps and does not pose much of a threat.

There is concern, however, regarding the potential impacts of the recent class X1.8/2B tenflare with associated strong Type II and IV sweeps which occurred at 00:16 UT on 16 March. There is uncertainty among forecasters regarding this event. At the present time, a light to moderate impact is expected late on 17 March or on 18 March. Minor storming is expected for the high latitudes and northerly middle latitudes. No major storming is expected. But given the recent unpredictability of events and uncertainty present among the forecasting community, confidence levels are not very high with regards to the possible accuracy of these predictions.

The one area where there is a strong consensus is with regards to the possibility for proton and PCA activity. There is a fairly high probability (now near 50%) that a major energetic flare could produce proton and PCA activity, particularly since the proton levels are already elevated near event thresholds. A condition YELLOW alert status will remain in place for possible PCA activity. Polar regions should be on the alert for possible flare-induced PCA activity. Radio communicators should be aware of the elevated risk for polar blackout conditions on HF polar paths should solar protons produce PCA activity.

Further major flare alerts will be posted as needed. For an update on the status of the warnings, consult the recent Solar Terrestrial Bulletin for 06:00 UT on 17 March.

** End of Alert **

Date: Sat, 16 Mar 1991 14:00:02 -0500
From: oler@HG.Uleth.CA (CARY OLER)
Subject: SOLAR TERRESTRIAL BULLETIN - WARNING UPDATES - 16 MARCH
To: info-hams@ucsd.edu

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SOLAR TERRESTRIAL BULLETIN

16 March, 1991

Solar Information and Warning Updates

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UPDATED WARNING INFORMATION

An interplanetary shock has not yet arrived as of 18:00 UT on 16 March. It is odd that a shock has not yet been observed and is causing conflicting views on whether or not we might still see storming. It is quite possible this shock could still impact with the earth anytime over the next 24 hours. However, as time passes by, the probability for any significant storming is decreasing. The SESC has dropped their storm warnings but do not deny that the potential still exists for storming if a shock arrives. On the other hand, the U.S. Air Force still have their warning flags up. So there is uncertainty regarding the state of affairs over the next 24 hours. A shock should have been observed over 24 hours ago.

We still believe there is a fair possibility that an interplanetary shock could impact with the earth on 16 or early on 17 March. However, there is also a good possibility that the sun-earth trajectory of the mass ejection was simply not in a good position and may have missed the earth altogether.

All things being considered, we will maintain our POTENTIAL GEOMAGNETIC STORM WARNING for the next 12 hours. If nothing materializes by 06:00 UT on 17 March, the warning will probably be terminated for this earlier flare event. If a shock does arrive, storming probably will not be nearly as intense as was previously forecasted. Hence, we are cancelling the POTENTIAL GEOMAGNETIC INDUCTION WARNING effective immediately. Also, we are cancelling the POTENTIAL LOW LATITUDE AURORAL ACTIVITY WARNING since the window for very significant activity has passed. However, if a shock arrives and conditions are particularly powerful thereafter, this warning could possibly be reinstated. For auroral observers, it wouldn't hurt to take a peak on the evening of 16 March (local time).

A POTENTIAL SATELLITE PROTON EVENT WARNING continues in progress at the present time. Also, a POTENTIAL PCA ACTIVITY WARNING remains in progress. Protons could easily surpass event thresholds with a powerful proton flare from Region 6545 (which is now on the central meridian). A proton enhancement continues in progress.

Geomagnetic activity could still reach moderate intensity minor storm levels, giving possibly moderate to high auroral activity over the northern middle and high latitude regions. However, no significant southward migration of the auroral zone is expected given the recent events (or lack of events). Geomagnetic activity at the present time (over middle latitudes) is very quiet. Abnormally quiet, in fact. No auroral activity was visible on the evening of 16 March.

SOLAR ACTIVITY INFORMATION UPDATE

Region 6545 continues to be a threat. It continues to sport a magnetic beta-gamma-delta configuration and has a fairly significant amount of shear in the main spot complex. It has grown over the past 24 hours and appears to be slightly more complex than it has been in the past. Continued major flaring from this region is expected. However, judging by its past history, the majority of the major flares will probably be of relatively short duration, but could include significant radio emissions and produce intensive short-duration SIDs/SWFs.

Further analysis has been performed on the most recent X-class flare originating from Region 6545 (at 00:52 UT on 16 March). Again, there are conflicting views regarding the potential impacts of this latest flare. It

had most of the ingredients and emissions characteristic of flare-induced terrestrial impacts. However, the problem arises when its past history is considered. It has produced strong Type II and IV flares previously that (in most other cases) would have produced moderate to strong intensity terrestrial impacts. However, nothing has yet been observed. Also, the duration of the flaring has been unusually short for the x-ray intensities that have been achieved. We know that Pioneer Venus was struck with an interplanetary shock and experienced some significant space environment conditions which could have produced major storming had it occurred near the earth environment. But we have not yet observed any of the conditions which that satellite apparently experienced.

It is entirely possible that the entire problem has simply been a positional one. No one can say for certain. If that has been the problem, there is a much better probability that we could see an interplanetary shock associated with the 00:52 UT flare event occurring late on 17 March or on 18 March sometime, followed by possible minor storming shortly thereafter. A potential geomagnetic storm warning may be issued for 17/18 March if a better consensus can be achieved regarding possible impacts. It should be noted that the majority of flares accompanied by strong Type II and IV sweeps have resulted in magnetic storming when well placed as this latest flare was. But again, uncertainty exists because previous major flaring from this region SHOULD have produced impacts, but hasn't (yet). The short duration of the flare event is also of concern in this regard.

To summarize, the POTENTIAL GEOMAGNETIC STORM WARNING is being continued for the next 12 hours. The POTENTIAL SATELLITE PROTON EVENT WARNING is being continued. The POTENTIAL PCA ACTIVITY WARNING is also being continued. And finally, the POTENTIAL MAJOR SOLAR FLARE WARNING remains in effect.

The POTENTIAL GEOMAGNETIC INDUCTION WARNING has been cancelled. Also, the LOW LATITUDE AURORAL ACTIVITY WARNING has been cancelled for now.

A re-evaluation of the Potential Geomagnetic Storm Warning will be posted around 06:00 UT on 17 March.

** End of Bulletin **

Date: Sun, 17 Mar 1991 03:35:45 -0500
From: oler@HG.Uleth.CA (CARY OLER)
Subject: SOLAR TERRESTRIAL BULLETIN - WARNING UPDATES - 17 MARCH
To: info-hams@ucsd.edu

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SOLAR TERRESTRIAL BULLETIN

17 March, 1991

Terrestrial Geophysical Warning Updates

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UPDATED WARNING INFORMATION

An interplanetary shock has failed to arrive as was originally anticipated for 15 and 16 March. A slight increase in geomagnetic activity has been observed over the past several hours, but no significant shocks or other anomalies have been observed. The flare-related shock appears to have missed the earth altogether.

Given the amount of uncertainty regarding potential geomagnetic impacts from the recent major flaring, the decision has been made to maintain the POTENTIAL GEOMAGNETIC STORM WARNING through to at least 19 March. The potential for a flare-induced increase in geomagnetic activity is presently considered to be fairly small, but is high enough to warrant continuation of the warning. High latitude minor geomagnetic storming is expected over the next three days at least. Whether conditions will intensify to encompass the middle latitudes is still an open question. We see no reason to expect major geomagnetic storming at the present time.

The following warnings remain in effect:

- POTENTIAL GEOMAGNETIC STORM WARNING (for 17, 18 and 19 March)
- POTENTIAL SATELLITE PROTON EVENT WARNING
- POTENTIAL PCA (POLAR CAP ABSORPTION) EVENT WARNING

If conditions change radically, an additional bulletin will be posted. Degradation of HF signal propagation over the high and polar latitude signal paths is expected to begin at any time. Some middle and lower latitude signal degradation is expected for 18 and possibly 19 March.

** End of Bulletin **

End of Info-Hams Digest
